DICKINSONIA FOSSIL FOUND IN BHIMBETKA TURNS OUT TO BE DECAYED BEEHIVE

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The fossil believed to be of Dickinsonia, found at the Bhimbetka Rock Shelters near Bhopal in 2021. | Photo Credit: The Hindu

Fossils of an extinct species of animal that scientists reported in a <u>sensational discovery from</u> <u>India's Bhimbetka Rock Shelters in 2021</u> have been found to be a false alarm.

Gregory Retallack, the lead author of the February 2021 paper that reported the discovery, has acknowledged to *The New York Times* that they are planning to correct their paper after a closer look at the site revealed the apparent fossil to really be wax smeared on a rock by a bee hive.

In March 2020, Dr. Retallack, a professor of palaeontology at the University of Oregon, and some other researchers were given a tour of the Bhimbetka Rock Shelters, in Madhya Pradesh, by members of the Geological Survey of India when they had flown to India to attend a conference.

There, according to *The New York Times*, they spotted by chance what looked like a 44-cmwide fossil of *Dickinsonia*, an animal that lived at least 538 million years ago, in a cave. *Dickinsonia* fossils in other parts of the world have indicated it was circular or oval in shape, somewhat flat, with rib-like structures radiating from a central column.

Dr. Retallack and his peers took photographs of the rock feature, since they weren't carrying their tools, and determined them with further analysis to be *Dickinsonia* fossils. They published a paper describing their findings in February 2021.

But when Joseph Meert, a professor of geology at the University of Florida, visited the same Bhimbetka cave in December 2022, he found some discrepancies with the other fossil finds.

Eventually, he was able to conclude that "the impression resulted from decay of a modern beehive which was attached to a fractured rock surface", as he wrote in his paper published in January 2023. When Dr. Retallack was notified of these findings, he decided to have his paper corrected.

Suvrat Kher, a sedimentary geologist and also a writer, speculated three possible reasons why the decayed beehive could have been mistaken for a *Dickinsonia* fossil.

One is that there is consensus in the community of paleobiologists that the flora and fauna of the Ediacaran period, 635-530 million years ago, "represented early animals and macroscopic eukaryotes living in a marine setting", whereas Dr. Retallack has "long held the view that they are lichen that lived in a terrestrial environment."

"It happens that the strata at Bhimbetka (Maihar sandstone) is a coastal terrestrial deposit," Mr. Kher continued. "When their group came across the 'fossil' impression, which admittedly looked like *Dickinsonia*, its sedimentologic context fitted Dr. Retallack's ideas of where *Dickinsonia* should be found."

Second: *Dickinsonia* is "an iconic member" of the Ediacaran period and "an important age marker", since it's believed to have lived 555-545 million years ago. So reporting its discovery would have carried "the prestige of a 'first report' from India" as well as solved the puzzle of the age of the Upper Vindhyan rocks. "The temptation could have been there to claim this priority," Mr. Kher said.

Indeed, when the fossil was believed to be legitimate, it suggested that the youngest Upper Vindhyan sediments in the Vindhyan Basin were 540 million years old. The rock shelters are located in this area. But now that the finding has been overturned, Meert et al. wrote in their paper, "The age of the Upper Vindhyan ... remains contested."

Third is "the timing," Mr. Kher said. "The beehive had to have been degraded just the right amount to be mistaken as a fossil. Anything more or less and the resemblance disappears, as has happened in the two years since the report. This ephemeral state is perhaps one reason why others hadn't noticed it elsewhere."

"The case made by Joe Meert and colleagues was quite convincing," Dr. Retallack told *The Hindu* in an email. "As you can see, the stakes in terms of age and palaeogeography were not very big. In science we accept mistakes, and acknowledgment of error should not be as rare as it is."

Dr. Retallack and his coauthors on the paper have also submitted a comment supporting Meert et al.'s conclusions to the journal that published both their papers, *Gondwana Research*. The comment, yet to be published, begins:

"Meert et al. (2023) have posted a novel and unexpected reinterpretation of remains interpreted by us (Retallack et al., 2021) as fossil Dickinsonia, and argue that it was a modern nest of giant bee (*Apis dorsata*). Although the remains had all essential morphological retails of Dickinsonia elongata, that regularity of form was fortuitous, and we agree that it is indeed a modern bee nest and not an Ediacaran fossil."

The Bhimbetka Rock Shelters are famous for their cave paintings, some of which <u>have been</u> <u>dated</u> to 8,000 B.C., while archaeological evidence at the site has indicated human settlements up to 100 millennia ago. So the Dickinsonia fossil finding, even if it had been borne out, wouldn't have been the most important feature of the rock shelters.

"In a country where most fossils languish in dusty institutes or museums, it is more likely the fossil would have been extracted," Devayani Khare, a geoscience writer, said. "Even if it were left in place, it wouldn't rival the prehistoric significance of the rock art."

Mr. Kher agreed. He added: "It is other places we should be concerned about. For example, rocks from the crucial time period when early animals first diversified (580-500 million years ago) occur only in one place in Peninsular India, in the Marwar basin (Jodhpur area)," he said.

"They also occur in the Lesser Himalaya around Mussorie and Nainital. But these rocks are not in the GSI [Geological Survey of India] geo-heritage site list. Ideally GSI should be more receptive to requests and recommendations by researchers on which sites deserve protection."

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